



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

512

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/695,647

10/24/2000

John Stevens Merriam JR.

Merriam I

2068

7590

10/13/2004

James W Wiegand
The Law Office of James W Wiegand
190 Babcock Street
Brookline, MA 02446

EXAMINER

VARTANIAN, HARRY

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 09/695,647	Applicant(s) MERRIAM, JOHN STEVENS	
Examiner Harry Vartanian	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 23-27 and 36 is/are rejected.
- 7) ☒ Claim(s) 6-22, 28-35, and 37-41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On Pg 2, Line 24 the patent number listed for "System and Method for Routing..." is not correct. Please correct the TYPO.

Appropriate correction is required.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters:

"1218" has been used to designate both a "phase recovery" and "phase tracking & symbol slicer"

"1220" has been used to designate both a "phase state" and "timing tracking loop vector"

"1226" has been used to designate both a "time state" and "phase tracking loop vector"

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 5, 27 are objected to because of the following informalities: The use of parentheses is improper in terms of the other claims. In the equation $4.8 + 3.2(N)$ the use of parentheses around the variable N can be later confused with the step N in claim 29. Moreover, the definition of $N=1,2,3,...11$ should not be in parentheses since it is an integral part of the claim. Please remove the variable N from the parentheses. TYPICALLY PARENTHESES SHOULD ONLY BE USED TO STATE MATTER THAT SHOULD NOT BE CONSIDERED PART OF THE CLAIM. Appropriate correction is required.

3. Claims 3, 16, 25, and 37-41 are objected to because of the following informalities: In claims 3, 16, and 25 the acronym DOCSIS is not defined. Claims 37-41 are objected to because they depend on an objected base claim.

4. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not). CLAIM 39 IS MISSING IN THE SEQUENCE.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject

Art Unit: 2634

matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under

35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 2-4, 23-26, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed et al (US Patent 6,519,773) in view of Freeman et al(US Patent 5724091) further in view of Quigley et al (US patent 6,650,624). Ahmed et al meets the following limitations of claim 1:

a transmitter configured to transmit digitally modulated signals operating in a band of frequencies that is divided into two or more non-overlapping channels, with each channel occupying no more than a predetermined maximum frequency band; **Fig 3B; FDM (Column 12, lines 44-56)**

the one or more ADCS being configured to convert the entire band to a digital data stream sampled at a rate of at least twice the highest frequency within the band; **(Column 9, line 27-60); fig 5a, item 506;**

a front end processor configured to receive the data stream and to down-convert to baseband and decimate this data stream to produce an output data stream that represents each channel within the band, with samples for each channel within the band at a rate that is a multiple of the symbol rate for the given channel; and **(Column 9, line 28-50); fig 5a, item 512**

Moreover, it should be noted that the limitation regarding the use of non-overlapping channels occupying a predetermined maximum frequency is met by the fact that Ahmed et al states the use of FDM(Column 12, lines 44-56). It is well known that FDM uses set channel sizes for each user that is usually separated by a guard band, thus making it non-overlapping. Also, the circuitry disclosed by Ahmed above is used in a transmitter. However, it would have taken one of ordinary skill to use such a system in a receiver, since it only depends on where along a link the data will be digitized.

Art Unit: 2634

Ahmed et al fails to specifically teach the use of ADC's in the receiver that are less than the number of non-overlapping channels. Ahmed et al vaguely meets the limitation by disclosing the use of one ADC in his receiver. Moreover, Ahmed et also fails to disclose a receiver with the ability to phase correct, time correct, and equalize.

However, Freeman et al discloses the use of a varying amount of ADC's in a CATV system using multiple video signals. Specifically, he states:

"According to the present invention, video signals 1 are directed to analog-to-digital ("A/D") convertors 2 which convert the various video signals into digital format for transmission. *A/D convertors 2 may be of any conventional type for converting analog signals to digital format. An A/D convertor may not be needed for each video signal 1, but rather fewer convertors, or even a single convertor are capable of digitizing various video signals 1.*" (Column 4, lines 39-48)

A motivation to combine is implied by Freeman et al in the above paragraph wherein he states that the use of fewer converters would result in less space needed in the front end.

Regarding the last limitation in claim 1, Quigley et al's head-end shows the use of phase correction and timing correction in figure 3. In Column 3, Lines 33-50 Quigley et al describes the use of a feedback equalizer in a head-end. A motivation to combine is stated by Quigley et al, wherein he states that a feedback equalizer can help with reducing distortion(Column 3, line 41), phase correction is needed to compensate for phase errors(Column 21, Lines 5-9), and timing correction is needed for subscriber to head-end synchronization(Column 2, Lines 30-49).

Regarding Claim 2, Ahmed et al meets the following limitation of the claim:

wherein the system is a cable television (CATV) system wherein the digitally modulated signals are upstream communications through a coaxial cable from a subscriber to a headend where the receiver system resides. (Column 1, lines 30-48); (Column 4, lines 15-18)

Regarding Claim 3, Quigley et al meets the following limitation of the claim:

wherein the digitally modulated signals are DOCSIS compatible signals. (Column 59, lines 1-14)

Regarding Claim 4, Ahmed et al meets the following limitation of the claim:

Art Unit: 2634

comprising mini-headends connected to subscribers through coaxial cables less than three miles in length and connected to data network through optical fiber. **(Column 16, line 16-31); Abstract for disclosing the use of Sonnet and (Column 5, 15-31)**

Moreover, regarding the coaxial cable being less than 3 miles is an inconsequential design choice and is not stated to provide an advantage, is used for a particular purpose, or solves a stated problem in the applicant's invention.

Regarding Claim 23, Ahmed et al met the limitations of the claim in the rejection for Claim 1 above.

Regarding Claim 24, Ahmed et al met the limitations of the claim in the rejection for Claim 2 above.

Regarding Claim 25, Quigley et al met the limitations of the claim in the rejection for Claim 3 above.

Regarding Claim 26, Ahmed et al met the limitations of the claim in the rejection for Claim 4 above.

Regarding Claim 36, Ahmed et al meets the following limitation of the claim:

(01) a down-converter accepting a data stream comprising samples of the entire band sampled at a rate of at least twice the frequency of the highest frequency in the band; **(Column 9, 59-67)**

(02) the down-converter converting the component channel signals within the band to baseband; and **fig 5b, item 518**

(03) a decimator decimating the down-converted signal received from the down-converter. **(Column 9, line 28-50); fig 5b, item 522b**

Art Unit: 2634

6. Claims 5 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed et al (US Patent 6,519,773) in view of Freeman et al(US Patent 5724091) further in view of Quigley et al (US patent 6,650,624). Ahmed et al, Freeman et al and Quigley et al meet all the limitations of claims 5 and 27, except they do not disclose expressly the claimed channel frequency allocation. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a frequency allocation, depending on the system requirements, as the one claimed. Applicant has not disclosed that frequency allocation provides an advantage, is used for a particular purpose, or solves a stated problem. Therefore, it would have been obvious to one of ordinary skill in this art to modify Ahmed et al, Freeman et al and Quigley et al to obtain the invention as specified in claims 5 and 27.

Allowable Subject Matter

7. Claims 6-22 and 28-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 37-41 would be allowable if the above claim objection number 3 is overcome.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 571.272.3048. The examiner can normally be reached on 10:00-6:30 Mondays to Fridays.


Art Unit: 2634

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571.272.3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry Vartanian
Examiner
Art Unit 2634

HV



STEPHEN CHIN
SUPERVISORY PATENT EXAMINE
TECHNOLOGY CENTER 2800